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| 10/611,930      | 07/03/2003  | Noel Morgen Burton-Krahn |                     | 3971             |

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EXAMINER

MEHRMANESH, ELMIRA

ART UNIT

PAPER NUMBER

2113

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/611,930

Applicant(s)

BURTON-KRAHN, NOEL  
MORGEN

Examiner

Elmira Mehrmanesh

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The application of Burton-Krahn, for a "Method and apparatus for providing transparent fault tolerance within an application server environment" filed July 3, 2003, has been examined.

Claims 1-9 are presented for examination.

Information disclosed and listed on PTO 1449 has been considered.

Claims 1-9 are rejected under 35 USC § 102.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Holmberg (U.S. Patent No. 6,247,141).

As per claim 1, Holmberg discloses an apparatus for providing transparent fault tolerance within an application server environment comprising a network of computers (col. 3, lines 11-16), said apparatus comprising:

a. a first server designated as a master server (Fig. 1, element 101) for storing and operating a first operating system program (Fig. 1, element 103) communicating by

system calls with a first server application program and a first fail over protection program (Fig. 2, element 215)

said first server designated as a master server connected to a computer network and having a network address (col. 3, lines 23-27) said first server having a first initial state (col. 7, lines 13-18), a first application state and a first network connection state (col. 8, lines 43-46)

b. a second server designated as a back-up server (Fig. 1, element 107) for storing and operating a second operating system program (Fig. 1, element 105) communicating by system calls with a second server application program and a second fail over protection program (Fig. 2, element 215')

said second operating system program, said second server application program and said second fail over protection program identical respectively to said first operating system program (col. 4, lines 42-49)

said first server application program and said first fail over protection program; said second server designated as a back-up server connected to said computer network; said second server having a second initial state (col. 7, lines 13-18), a second application state and a second network connection state (col. 8, lines 43-46)

c. wherein the first server designated as a master server is operatively connected to the second server designated as a back-up server and wherein the first server is in continuous communication with said second server so that the first fail over protection program is in constant communication with the second fail over protection program and further wherein the operation of the first server and second server are synchronized by

Art Unit: 2113

the first and second fail over protection programs respectively (Fig. 1, element 209, *Backup path*)

d. wherein the first and second fail over protection programs include:

i. means for establishing synchronicity between the first server and the second server; ii. means for monitoring synchronicity between the first server and the second server; iii. means for detecting non-synchronicity between the first server and the second server; (col. 6, lines 58-65)

iv. means for invoking the first or second fail over protection programs upon detection of non-synchronicity between the first and second servers (col. 3, lines 11-16).

e. wherein said first and second fail over protection programs, when invoked, cause a transfer of server operations from a failed server to a non-failed server upon the detection of non-synchronicity or non-responsiveness of either server (col. 3, lines 8-16), and wherein transfer from failed to non-failed server is totally transparent to the client (col. 3, lines 11-16).

As per claim 2, Holmberg discloses means for establishing synchronicity between the first server and the second server includes means for:

a. synchronizing the first and second initial state; b. synchronizing the first and second application state; and, c. synchronizing the first and second network connection state (col. 6, lines 58-65).

Art Unit: 2113

As per claim 3, Holmberg discloses means for synchronizing the first and second application states includes means for intercepting system calls between the first server application program and the first operating program (Fig. 2, elements 215-, 215' and 209).

As per claim 4, Holmberg discloses a method for providing transparent fault tolerance within an application server environment comprising a network of computers (col. 3, lines 11-16), said method comprising the steps of:

- a. providing a first server (Fig. 1, element 101) for storing and operating a first operating system program (Fig. 1, element 103), a first server application program and a first fail over protection program (Fig. 2, element 215)
- b. providing a second server (Fig. 1, element 107) for storing and operating a second operating system program (Fig. 1, element 105), a second server application program and a second fail over protection program (Fig. 2, element 215')
- c. placing said first server in continuous communication with said second server (Fig. 1, element 209, *Backup path*)
- d. designating from the first server and the second server a master server and a back-up server (Fig. 1, elements 101, 107)
- e. synchronizing the operation of the master server and the back-up server (col. 3, lines 29-33)
- f. providing from the network an identical client data stream input simultaneously to the master server and the back-up server (col. 4, lines 42-49) wherein:

Art Unit: 2113

i. the master server and back-up server have the same network address (col. 3, lines 23-27)

ii. the master server and back-up server simultaneously process said identical client data stream (Fig. 3) and wherein,

iii. the master server and the back-up server simultaneously produce a respective first and second output data streams (Fig. 3, elements 303, 307); and wherein,

iv. said first and said second output data streams are identical if the master server and the back-up server are operating correctly (col. 4, lines 31-41);

g. comparing by said first and second fail over protection programs respectively, said first output data stream with said second output data stream for divergence from identity of the first output data stream from the second output data stream (col. 4, lines 31-49);

h. detecting by said first and second fail over protection programs no divergence from identity of the first output data stream from the second output data stream (col. 4, lines 31-49).

As per claim 5, Holmberg discloses steps of:

a. receiving by said first or second fail over protection programs an indication of divergence from identity of the first output data stream from the second output data stream (col. 4, lines 31-49);

Art Unit: 2113

b. invoking the first or second fail over protection program wherein the backup server assumes the duty of the master server without breaking any network connections (col. 3, lines 11-16).

As per claim 6, Holmberg discloses the first and second operating system programs and the first and second server application programs are deterministic so that when the first and second operating system programs and the first and second server application programs receive the same input they will produce the same output (col. 4, lines 31-41).

As per claim 7, Holmberg discloses the step of synchronizing the first master and second back-up servers comprises the steps of:

a. providing to each of the master and back-up operating system programs identical executables, configuration files and data files prior to starting the master and back-up operating system programs (col. 4, lines 31-49)

b. synchronizing the operation of the master application server program with the back-up application server program so that the master and back-up application server programs have an identical internal operating state and so that each of the master and back-up application server programs produce an identical first and second data output respectively (col. 4, lines 31-49);

c. synchronizing the network connection state between the master server and back-up server application programs and the network (col. 3, lines 29-33).



As per claim 8, Holmberg discloses synchronization of the master and back-up server application programs comprises the steps of:

- a. providing the master server and the back-up server with identical interfaces to the network (col. 4, lines 31-41);
- b. providing in each of the master and back-up servers a system call interceptor which will intercept system calls traveling from their respective server application systems to their respective operating system programs (Fig. 3)
- c. starting the master and the back-up server application programs (col. 3, lines 11-16);
- d. synchronizing the result of system calls between master and backup (col. 3, lines 23-27).

As per claim 9, Holmberg discloses synchronizing the network connection state between the network and the master and back-up server application programs comprises the following steps:

- a. providing identical network addresses to the master and back-up servers (col. 3, lines 23-27).
- b. providing a simulated network layer within the master server and back-up servers (Fig. 3);
- c. providing a client data stream to each of the master server and back-up server (Fig. 3, elements 302, 306);

- d. receiving said client data stream by the master server simulated network layer (Fig. 3, element 302);
- e. transmitting the client data stream received by the master server simulated network layer to the master server application program (Fig. 3, element 302);
- f. processing the client data stream by the master server application program (Fig. 3, element 303);
- g. detecting differences in the master and backup's output (col. 4, lines 31-41)
- h. invoking the first fail over protection program (col. 3, lines 11-16).

### **Related Prior Art**

The following prior art is considered to be pertinent to applicant's invention, but nor relied upon for claim analysis conducted above.

Kandasamy et al. (U.S. Patent No. 5,513,314), "Fault tolerant NFS server system and mirroring protocol".

Duso et al. (U.S. Patent No. 5,987,621), "Hardware and software failover services for a file server".

Dion et al. (U.S. Patent No. 6,163,856), "Method and apparatus for file system disaster recovery".

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmira Mehrmanesh whose telephone number is (571) 272-5531. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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